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NOMENCLATORIAL STUDIES IN MALAXIS AND SPIRANTHES

BY

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THE FOLLOWING nomenclatorial revision in *Malaxis* and *Spiranthes* was made as a result of a careful restudy of these genera based on records of types in our herbarium and particularly on a large collection of specimens from Mr. Erik M. Östlund of Cuernavaca, Morelos, Mexico.

Malaxis aurea Ames in Sched. Orch. 5 (1923) 3, fig. 1.

Microstylis guatemalensis Schlechter in Fedde Rept. 21 (1925) 334.

It appears that the Guatemalan *Microstylis guatemalensis* is a somewhat smaller plant vegetatively than the Costa Rican *Malaxis aurea*. However, both species were described from limited material, so the range of size cannot be estimated.

After careful comparison of the drawings, descriptions and flowers of these species (the flowers of *Microstylis guatemalensis* kindly contributed by Dr. Mansfeld), we are unable to find any differences which are in any degree diagnostic.

Malaxis brachyrrhynchos (Reichb.f.) Ames in Proc. Biol. Soc. Wash. 35 (1922) 84, as *M. brachyrrhyncha*.

Microstylis brachyrrhynchos Reichenbach filius in Flora 71 (1888) 152.

Malaxis Lankesteri Ames in Sched. Orch. 4 (1923) 7.

A rigid comparison of the type specimen of the Costa Rican *Malaxis Lankesteri* shows that it cannot well be segregated from the Mexican *Microstylis brachyrrhynchos* which is represented in our herbarium by photographs of the type and cotype and floral analyses.

Judging from the floral analyses of the type and cotype and from the numerous examples of this species in our collection, the distinctness of the apical lobing of the lip and presence of basal auricles is a variable character. The lip appears to vary from simple to obscurely trilobulate or more rarely distinctly trilobulate at the apex.

This species occurs in our herbarium from Mexico, Guatemala, Honduras and Costa Rica.

Malaxis calycina (Lindl.) O. Kuntze Rev. Gen. Pl. 2 (1891) 673.

Dienia calycina Lindley Gen. & Sp. Orch. Pl. (1830) 23.

Ophrys monophyllos Pavon in Herb. Lambert apud Lindley Gen. & Sp. Orch. Pl. (1830) 23, *in synon.*

Microstylis gracilis Ridley in Journ. Linn. Soc. 24 (1888) 321.

Microstylis calycina Ridley in Journ. Linn. Soc. 24 (1888) 331.

Serapias parasitica Pavon Mss. apud Ridley in Journ. Linn. Soc. 24 (1888) 331, *in synon.*

Microstylis monticola Schlechter in Fedde Repert. 3 (1906) 17.

Microstylis microtoides Schlechter in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 381.

Malaxis monticola Ames in Proc. Biol. Soc. Wash. 35 (1922) 84.

The concept *Dienia* is now generally referred to the genus *Microstylis* or to the earlier name *Malaxis*.

A photograph of the type of *Microstylis gracilis* shows a plant which is somewhat smaller than that of *Dienia calycina* and with rather laxer inflorescence. However, the floral drawing of *D. calycina* by Lindley agrees well with the description of the flower of *Microstylis gracilis*. Moreover, Ames, who has examined the types of both species, describes the lip of each as "transversely elliptical." Because of the close vegetative and floral similarity between the types, it appears that they should be regarded as synonymous.

Microstylis monticola, of which we have a record of the type, is in thorough agreement both vegetatively and florally with *Dienia calycina*. In one example the lower flowers of the raceme are very loosely arranged as in the type of *Microstylis gracilis*.

A drawing of the type of *Microstylis microtoides* shows the single leaf decidedly below the middle of the stem, while in the other representatives of *Malaxis calycina* the leaf is about at the middle of the stem. The only other discrepancy from the latter species is that the dorsal sepal does not exceed the lateral sepals in size. The absence of morphological differences, however, indicates that this species is inseparable from *Malaxis calycina*.

Malaxis calycina occurs in Mexico, Guatemala and Costa Rica. It is also reported from Peru (*Pavon*) by Ridley.

Malaxis Ehrenbergii (*Reichb.f.*) O. Kuntze Rev. Gen. Pl. 2 (1891) 673.

Microstylis Ehrenbergii Reichenbach filius in Linnaea 22 (1849) 835.

Microstylis purpurea S. Watson in Proc. Am. Acad. 18 (1883) 195.

Microstylis porphyrea Ridley in Journ. Linn. Soc. 24 (1888) 320.

Achroanthes purpurea Greene in Pittonia 2 (Sept. 15, 1891) 184.

Malaxis porphyrea O. Kuntze Rev. Gen. Pl. 2 (Nov. 5, 1891) 673.

Malaxis purpurea O. Kuntze Rev. Gen. Pl. 2 (Nov. 5, 1891) 673.

Microstylis minutiflora Schlechter in Bull. Herb. Boiss. 7 (1899) 540.

Achroanthes porphyrea Wooton & Standley in Contrib. U.S. Nat. Herb. 16 (1913) 116.

We have recently received from Dr. R. Mansfeld of Berlin a photograph and several flowers of the type of *Microstylis minutiflora* Schltr. This species is represented by a single specimen of which the inflorescence is incomplete. However, the raceme is described as exceeding the leaf, as obviously would be the case if the inflorescence were complete. In all specimens of *Malaxis Ehrenbergii* examined by us the inflorescence much surpasses the leaf. The type of *Microstylis minutiflora* shows a leaf which might be described as elliptic-oblong and is somewhat longer and narrower in proportion than is usually the case in *Malaxis Ehrenbergii*. The flowers of *Microstylis minutiflora*, however, are in almost perfect agreement with those of *Malaxis Ehrenbergii*, although perhaps a trifle smaller.

From these considerations, therefore, it appears to us wise to regard *Microstylis minutiflora* as conspecific with *Malaxis Ehrenbergii*.

This species extends from Arizona and New Mexico through Mexico to Guatemala.

Malaxis fastigiata (Reichb.f.) O. Kuntze Rev. Gen. Pl. 2 (1891) 673.

Microstylis ophioglossoides Nutt. *β. mexicana* Lindley in Bot. Reg. 15 (1829) t. 1290, quoad tabellam ex parte.

Malaxis maianthemifolia A. Richard & Galeotti in Ann. Sci. Nat. ser. 3, 3 (1845) 18, non Schlecht. & Cham. (1831).

Dienia majanthemifolia Reichenbach filius in Linnaea 19 (1847) 369.

Microstylis fastigiata Reichenbach filius in Linnaea 22 (1849) 834.

Ophrys ensifolia Pavon Mss. apud Ridley in Journ. Linn. Soc. 24 (March 1888) 326, *in synonym*.

Microstylis longisepala Ridley in Journ. Linn. Soc. 24 (March 1888) 327.

Microstylis linguella Reichenbach filius in Flora 71 (April 1888) 153.

Malaxis longisepala O. Kuntze Rev. Gen. Pl. 2 (1891) 673.

Malaxis linguella Ames in Proc. Biol. Soc. Wash. 35 (1922) 84.

As Dr. Ridley points out in his monograph of *Microstylis* (Journ. Linn. Soc. 24 (1888) 326), the figures in the Botanical Register (t. 1290) of the complete plant and also of the flowering scape represent *Malaxis fastigiata* and not *M. ophioglossoides*. Reichenbach proposed the name *fastigiata* as a substitute for the descriptive *maianthemifolia* which was invalidated by its earlier use for another plant.

The concept, *Microstylis longisepala*, was erected by Ridley to describe a plant which he says is "Very near *M. fastigiata*, especially the form collected by Pavon, but the flowers are larger, and the longer sepals are very conspicuous." However, a record of the type of *Microstylis longisepala* in our herbarium shows a plant which exactly agrees with some specimens of *M. fastigiata*.

Moreover, a floral analysis of *Malaxis maianthemifolia* A. Rich. & Gal., which is the type of *Microstylis fastigiata* Reichb. f., shows a lateral sepal which conspicuously surpasses the lip, as in *Microstylis longisepala*. Indeed, it would seem to us that the degree of superiority of one organ over another, if of limited extent, is scarcely a logical basis for specific separation in a variable genus.

A record of the type of *Microstylis linguella* does not show any characters to separate it from *Malaxis fastigiata*. Like the typical form of *Malaxis fastigiata*, this species has a linear-lanceolate rostriform termination to the lip. Judging from Reichenbach's analysis of the species, it has rather narrowly lanceolate sepals.

Altogether *Malaxis fastigiata* appears to be an extremely variable species. The most striking points of variation are the size, the presence of one or two leaves on the stem, the narrowed-clasping or cordate base of the leaf and the degree of acumination of the lip.

The species extends through Mexico, Guatemala and Honduras to Bolivia, as well as to Santa Martha [Colombia] fide Ridley.

Malaxis hastilabia (Reichb. f.) O. Kuntze Rev. Gen. Pl. 2 (1891) 673.

Microstylis hastilabia Reichenbach filius Beitr. Orch. Centr.-Am. (1866) 101.

Malaxis uncinata Ames & Schweinfurth in Sched. Orch. 10 (1930) 15.

The Costa Rican *Malaxis uncinata* was separated from the Costa Rican *Microstylis hastilabia* by the presence of uncinata basal auricles of the lip. However, the recent receipt from the Reichenbachian Herbarium of a floral analysis which represents Reichenbach's conception of the flower of *Microstylis hastilabia* shows that these basal auricles approach too nearly those of *Malaxis un-*

cinata. While they are not truly uncinata, as in most examples of *Malaxis uncinata*, these basal auricles appear somewhat diverse in shape varying from broadly triangular to linear or linear-triangular and curved forward. One flower of a Costa Rican collection of so-called *Microstylis hastilabia* (Brenes 32) shows a lip with one basal auricle uncinata, and the other wide-spreading slightly curved and sigmoid near the apex. It appears, therefore, that the basal auricles are variable in shape, all the more so because those of specimens from South America are almost straight and little spreading.

The type of *Malaxis uncinata* appears to agree very well in size and character with Ridley's description of *Microstylis hastilabia* in his monograph of the genus (Journ. Linn. Soc. 24 (1888) 325).

Malaxis hastilabia is a Costa Rican species, but is also reported (or specimens have been seen) from Guatemala, Colombia, British Guiana, Brazil and Peru.

Malaxis Javesiae (Reichb.f.) Ames in Proc. Biol. Soc. Wash. 35 (1922) 84.

Microstylis Javesiae Reichenbach filius in Flora 71 (1888) 152.

Malaxis mexicana Ames in Proc. Biol. Soc. Wash. 35 (1922) 82.

The only notable difference between the above concepts is that *Malaxis Javesiae* appears to be uniformly monophyllous, while the single specimen that comprises the type of *M. mexicana* is diphyllous. However, the presence of one or two subopposite leaves in the genus *Malaxis* is of extremely variable occurrence in representatives of one species, and the character can scarcely have diagnostic weight. The stem of *Malaxis mexicana* appears to be stouter than that of *M. Javesiae*.

This species is known to occur only in Mexico.

Malaxis lepidota (*Finet*) Ames in Proc. Biol. Soc. Wash. 35 (1922) 84.

Microstylis lepidota Finet in Bull. Soc. Bot. Fr. 54 (1907) 531, t. 11, figs. 1-7.

Malaxis macrantha Ames Orch. 2 (1908) 263, text cut.

A comparison of the types of these species shows that they are essentially identical. In *M. macrantha* all parts of the perianth appear to be somewhat broader than in *M. lepidota*. The epidermal emergences attributed to the inner surface of the sepals and petals of *Microstylis lepidota* appear to be a highly variable character, sometimes being manifest only along the veins or not at all.

This species occurs in Mexico and Honduras.

Malaxis macrostachya (*La Llave & Lex.*) O. Kuntze Rev. Gen. Pl. 2 (1891) 673.

Ophris macrostachya La Llave & Lexarza Nov. Veg. Descr. 2 (1825) (Orch. Opusc.) 9.

Microstylis macrostachya Lindley Gen. & Sp. Orch. Pl. (1830) 21.

Microstylis montana Engelm. apud Rothrock in Wheeler Rept. U. S. Geogr. Surv. W. 100th Merid. 6 Bot. (1878) 264.

Malaxis densiflora A. Richard & Galeotti Mss. apud Ridley in Journ. Linn Soc. 24 (1888) 331.

Achroanthes montana Greene in Pittonia 2 (Sept. 15, 1891) 183.

Malaxis montana O. Kuntze Rev. Gen. Pl. 2 (Nov. 5, 1891) 673, non Blume.

Malaxis Soulei L. Williams in Ann. Mo. Bot. Gard. 21 (1934) 343.

La Llave and Lexarza in their typically indefinite description of *Ophris macrostachya* make no mention of the retuse or lobulate apex of the lip, and Lindley in his

reduction of the species to *Microstylis* merely quotes the earlier description. However, (in Bentham Pl. Hartweg. (1845) 52) Lindley cites as *Microstylis macrostachya* a collection of which we have a photograph with a floral analysis (apparently made by Finet). In this drawing the round-ovate lip is shown to be sharply retuse at the apex with the disc concave in the centre. There is indicated also the presence of a little tooth just below the retuse apex which usually becomes, at least in herbarium specimens, a more or less prominent lobule in the centre of the retuse apex. In a large number of collections examined the development and consequent prominence of the little tooth appears to vary. Ridley, in his monograph of *Microstylis* (Journ. Linn. Soc. 24 (1888) 316), separates *Microstylis macrostachya* from *M. montana* by the following characteristic—"Labellum apice bilobo . . . *macrostachya*. Labellum apice trilobo, lobo mediano minuto. . . *montana*." However, Rothrock says, in his description of *Microstylis montana*, "lip . . . obtuse or occasionally notched at apex." In the flowers from the type of *Microstylis montana* examined the lip appears always to be retuse with the central tooth relatively inconspicuous.

The separation of *Microstylis montana* from *Malaxis macrostachya*, therefore, would not seem reasonable.

This species appears to be variable in size, in having usually a single leaf but rarely two leaves, and in the lobing of the lip.

It extends from Arizona through Mexico to Costa Rica (small form).

Malaxis majanthemifolia Schlechtendahl & Chamisso in Linnaea 6 (1831) 59.

Malaxis ichthiorhynca A. Richard & Galeotti in Ann. Sci. Nat. ser. 3, 3 (1845) 18.

Malaxis cochleariaefolia A. Richard & Galeotti in

Ann. Sci. Nat. ser. 3, 3 (1845) 18.

Microstylis cochleariaefolia Reichenbach filius in Linnaea 22 (1849) 834.

Microstylis majanthemifolia Reichenbach filius in Linnaea 22 (1849) 834.

Microstylis ichthyorrhyncha Reichenbach filius Beitr. Orch. Centr.-Am. (1866) 99.

Achroanthes maianthemifolia Greene in Pittonia 2 (Sept. 15, 1891) 184.

Microstylis elegantula Schlechter in Fedde Repert. 3 (1906) 17.

In our herbarium is a copy of a sketch (from the Reichenbachian Herbarium at Vienna) of the type of *Malaxis majanthemifolia* Schlecht. & Cham. with an analysis of its flower as well as a similar record of *Malaxis ichthyorrhyncha*. The only difference between the two species is that the lip of *Malaxis majanthemifolia* is drawn as shortly but distinctly unguiculate and the disc does not show any concavity or depression, while the lip of *Malaxis ichthyorrhyncha* is shown (and described) as sessile with a large concavity in the lower portion. Both species, however, have a lip of the same form even to the auriculate base and the concavity might readily be omitted from a drawing. Otherwise the floral parts are as similar as could be expected from different plants and the vegetative proportions (as amplified by the description of *Malaxis majanthemifolia*) are nearly identical. Altogether, therefore, it appears to us thoroughly justifiable to regard the species as synonymous.

Malaxis cochleariaefolia is apparently unrepresented at the Muséum d'Histoire Naturelle in Paris which is the repository of the Richard and Galeotti plants; but from the brief description the species appears to be synonymous with *Malaxis ichthyorrhyncha* and has been so regarded by Ridley in his monograph of *Microstylis* (Journ.

Linn. Soc. 24 (1888) 319).

Microstylis elegantula, of which we have a duplicate type, appears to be only a larger form of *Malaxis majanthemifolia* which seems to be a species of the greatest variability in size. One collection from Guatemala (*Türckheim II* 1992) contains one plant which is only about 6.5 cm. tall with proportionally small leaves and flowers, while the type of *Microstylis elegantula* sometimes reaches 40 cm. in height. Sometimes, as in the Guatemalan collection cited and in specimens from Honduras, the lip is relatively shorter than typical with longer basal auricles and rather broader petals.

Malaxis majanthemifolia extends from Mexico through Guatemala to Honduras.

Malaxis pandurata (*Schltr.*) *Ames* in Proc. Biol. Soc. Wash. 35 (1922) 84.

Microstylis pandurata Schlechter in Fedde Repert. 3 (1906) 77.

Microstylis Türckheimii Schlechter in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 382.

Malaxis Tuerckheimii *Ames* in Proc. Biol. Soc. Wash. 35 (1922) 85.

Careful comparison of the drawings and descriptions of these species supplemented by flowers from the types, kindly sent by Dr. Mansfeld, convince us that they should be regarded as synonymous. Indeed the only differences between them appear to be the somewhat narrower leaves and more prominent central thickening through the disc of the lip of *Malaxis pandurata*. These characters, however, are transitional and consequently are surely not of diagnostic weight.

This species occurs in Guatemala and Costa Rica.

Malaxis Parthonii *Morren* in Bull. Acad. Roy... de Belge 5 (1838) 485, t.

Microstylis histionantha Link, Klotzsch & Otto Icon. Pl. Rar. Hort. . . . Berol. 1 (1841) 11, t. 5.

Microstylis Parthonii Reichenbach filius in Walp. Ann. 6 (1861) 206.

Microstylis Brenesii Schlechter in Fedde Repert. Beihefte 19 (1923) 167.

The lip of *Malaxis Parthonii*, as depicted by Morren, is surely narrower in form than that of *Microstylis histionantha* as figured by Link, Klotzsch and Otto or by Hooker in Botanical Magazine 70 (1844) t. 4103. However, authors of the high standing of Cogniaux and Ridley (the latter in his monograph of the genus) consider the two species as synonymous. Moreover, we have examined a large series of specimens in which the lips, even in one collection, vary from broadly ovate to suborbicular or even transversely round-elliptic.

Microstylis Brenesii is supposed to differ from the allied species in its smaller habit, sharper leaves, smaller flowers and the form of the lip. However, a drawing of the type of this species in our herbarium shows a leaf very similar in shape to that of *Malaxis Parthonii* and *Microstylis histionantha*. As shown by a floral analysis of Schlechter's species, the lip varies (perhaps due to spreading) from round-ovate to transversely round-oval and is in no sense subreniform-flabellate as Schlechter describes it. At least in one of the lips shown, there appears to be a basal depression (as in *Malaxis Parthonii*). The vegetative size of plant and flowers certainly is scarcely diagnostic in this genus.

Malaxis Parthonii appears to extend from Mexico, through Central America to Costa Rica and also occurs in Colombia, Venezuela, Brazil and Peru.

Malaxis Reichei (Schltr.) Ames & Schweinfurth
comb. nov.

Microstylis Reichei Schlechter in Fedde Repert. 21 (1925) 335.

In accordance with the law of priority, this species must be transferred to the earlier generic name *Malaxis*.

Recently we have received from Erik M. Östlund of Cuernavaca, Mexico, a single specimen which appears to be referable to this species. It agrees well with the habit and analytical drawings of the type in our herbarium and with the description, slight discrepancies appearing in the obtuse (not acute or acuminate) leaves which are slightly below the middle of the stem and in the narrower basal part of the lip. The specimen was collected under oaks on rocky mountain slopes in Guerrero, near the Cuernavaca-Taxco Road (Km. 156) at about 1,650 meters altitude by Otto Nagel (*Östlund 1155*) on August 10, 1932.

This species is closely allied to *Malaxis fastigiata* (Reichb.f.) O.Ktze. and may prove to be reducible to that species when more material is available for comparison. It appears, however, to differ from that species in its abrupt terminal ovate-oblong lobe of the lip and in the presence of a more or less distinct though small point on either side of the base of the middle lobe.

***Malaxis unifolia* Michaux** Fl. Bor.-am. 2 (1803) 157.

Malaxis ophioglossoides Muhlenberg ex Willdenow Sp. Pl. 4 (1805) 90, *in synonym*.

Achroanthes unifolia Rafinesque in Med. Repos. N.Y. Hex. 2, 5 (1808) 352.

Microstylis ophioglossoides Nuttall Gen. No. Am. Pl. 2 (1818) 196, sub *Malaxis*, as subgenus—apud A. Eaton Man. Bot. No. & Mid. States ed. 3 (1822) 353, *Microstylis ophioglossoides* Nutt. *β. mexicana* Lindley in Bot. Reg. 15 (1829) t. 1290, pro parte et textu.

Malaxis thlaspiiformis A. Richard & Galeotti in Ann. Sci. Nat. ser. 3, 3 (1845) 18.

Microstylis unifolia Britton, Sterns & Poggenberg Prelim. Cat. Anthoph. & Pterid. N. Y. (1888) 51.

Microstylis Grisebachiana Fawcett & Rendle in Journ. Bot. 47 (1909) 7.

Malaxis Grisebachiana Fawcett & Rendle Fl. Jam. 1 (1910) 43, t. 6, figs. 18-23.

A photograph and a sketch with floral analysis of *Malaxis thlaspiiformis* in our herbarium show that this species represents merely a vegetatively enlarged form of the widespread North American *Malaxis unifolia*. According to the drawing, however, the lip of *M. thlaspiiformis* appears to be markedly shorter than the lateral sepals while in all the specimens of *M. unifolia* examined the lip subequals or surpasses the sepals.

Malaxis Grisebachiana, as described and figured by Fawcett and Rendle, depends for its separation from *M. unifolia* on "the auriculate, not cordate, lip, and the position of the leaf nearer the base of the stem." However, we fail to distinguish any difference between the terms auriculate and cordate, as applied to the lip. Certainly we could see no difference in the flower of *M. Grisebachiana* examined from that of the typical *M. unifolia*. Moreover, the position of the leaf is extremely variable in *Malaxis unifolia*: specimens from Newfoundland (*Fernald & Wiegand* 3141, 5246) show the leaf about as near the base of the plant as in some specimens of *M. Grisebachiana* from Jamaica cited by Fawcett and Rendle. On the other hand, frequent collections from the mainland of North America have the leaf considerably above the middle of the stem. Thus it would appear to us that the position of the leaf is not diagnostically important or worthy of specific recognition.

Malaxis unifolia occurs in North America from Newfoundland west to Manitoba and locally south to Kentucky, Georgia and Illinois; also found in Mexico, Cuba and Jamaica.

Spiranthes cinnabarina (*La Llave & Lex.*)
Hemsley in *Godman & Salvin Biol. Centr.-Am. Bot.* 3
(1884) 300.

Neottia cinnabarina *La Llave & Lexarza* *Nov. Veg.*
Descr. 2 (1825) (*Orch. Opusc.*) 3.

Stenorrhynchus cinnabarinus *Lindley* *Gen. & Sp.*
Orch. Pl. (1840) 479; in *Bot. Reg.* 33 (1847) t. 65.

Stenorrhynchus montanus *Lindley* in *Bentham Pl.*
Hartweg. (1842) 95.

Spiranthes montana *Hemsley* in *Godman & Salvin*
Biol. Centr.-Am. Bot. 3 (1884) 301.

Gyrostachys cinnabarina *O. Kuntze* *Rev. Gen. Pl.*
2 (1891) 664.

Gyrostachys montana *O. Kuntze* *Rev. Gen. Pl.* 2
(1891) 664.

A careful comparison of the type description of *Neottia cinnabarina* (supplemented by the plate of *Stenorrhynchus cinnabarinus* in the *Botanical Register*) with a photograph of the type of *Stenorrhynchus montanus* (which bears a drawing of the lip) leaves no doubt that the plants are conspecific. The only discrepancy noticeable is that the lip of *Stenorrhynchus montanus* shows a somewhat obovate dilation in the middle, while the lip of *Stenorrhynchus cinnabarinus* is represented (*Bot. Reg.* 33, t. 65) as having an elliptical dilation below the middle. However, this character is seen to vary in specimens examined.

The lack of a definite spur-like mentum indicates that this species should be classed with the genus *Spiranthes*.

This species appears to be limited to Mexico and Guatemala.

Spiranthes durangensis Ames & Schweinfurth
nom. nov.

Spiranthes saltensis Ames Orch. 2 (1908) 258; Orch. 3 (1909) 72, t. 51, non Grisebach (1879).

Schiedeella saltensis Schlechter in Beihefte Bot. Centralbl. 37, Abt. 2 (1920) 381.

Due to the earlier use of the combination, *Spiranthes saltensis* by Grisebach in 1879, its use by Ames in 1908 is invalid. Therefore we propose the new name as cited above, alluding to the Mexican state where this species was originally discovered.

A Mexican species which has also been discovered in the Chisos Mountains of Texas.

Spiranthes michuacana (La Llave & Lex.)
Hemsley in Godman & Salvin Biol. Centr.-Am. Bot. 3 (1884) 301, as *mechoacana*.

Neottia michuacana La Llave & Lexarza Nov. Veg. Descr. 2 (1825) (Orch. Opusc.) 3.

Neottia sulphurea La Llave & Lexarza Nov. Veg. Descr. 2 (1825) (Orch. Opusc.) 4.

Stenorhynchus sulphureus Lindley Gen. & Sp. Orch. Pl. (1840) 478.

Stenorhynchus Michuacanus Lindley Gen. & Sp. Orch. Pl. (1840) 480.

Stenorrhynchus Madrensis Reichenbach filius in Bonpl. 3 (1855) 177.

Spiranthes madrensis Hemsley in Godman & Salvin Biol. Centr.-Am. Bot. 3 (1884) 301.

Spiranthes sulphurea Hemsley in Godman & Salvin Biol. Centr.-Am. Bot. 3 (1884) 302.

Gyrostachys madrensis O. Kuntze Rev. Gen. Pl. 2 (1891) 664.

Gyrostachys sulfurea O. Kuntze Rev. Gen. Pl. 2 (1891) 664.

Spiranthes bracteolaris Kränzlin in Arkiv Bot. 14 (1915) 7.

A careful comparison of the descriptions of *Neottia michuacana* and *N. sulphurea* shows that the former is a slightly taller plant having cauline leaves as well as the strictly basal leaves of *N. sulphurea*. The only other differences appear to be a matter of degree and are trivial.

We are inclined to refer this species to the genus *Spiranthes* rather than to *Stenorrhynchus* since the mentum formed by the lateral sepals with the foot of the column is not distinct nor prominent, whereas we rely chiefly on the prominent mentum for the distinctness of *Stenorrhynchus*.

Stenorrhynchus madrensis depends chiefly for its separation from *Neottia sulphurea* (with which it is compared) on its quaquaversal (not secund) raceme, and its not urceolate perianth. A photograph of the type plant of *Stenorrhynchus madrensis*, however, shows the perianth of mature flowers distinctly urceolate with ringent apices of the segments, as described in *Neottia sulphurea* and *N. michuacana*. The raceme is not secund in any sense, but the secund or quaquaversal arrangement of dense racemes is a character which is certainly not of specific weight in the genus *Spiranthes* (both forms occurring in the widely dispersed *Spiranthes gracilis* (Bigel.) Beck). The lip of *Stenorrhynchus madrensis* is described as pandurate, but the slight constriction above the centre of the lip is seen to be a variable character in plants referred to that species.

Spiranthes bracteolaris Kränzlin., of which we have examined the type number, has the ensiform or narrowly lanceolate basal and cauline leaves of *Neottia michuacana* and appears otherwise to agree well with that species ex-

cept that its floral bracts distinctly surpass the flowers instead of equalling them. The racemes of *Spiranthes bracteolaris* are described as secund, but they might better be termed quaquaversal with a secund tendency. A strange coincidence in connection with the two forms is that *N. michuacana* is described as "planta odoratissima" and that *Spiranthes bracteolaris* has strongly fragrant vegetative parts in the dried type specimen twenty-five years after it was collected! Like *Neottia michuacana*, this species blooms in the state of Michuacán in October.

Spiranthes michuacana appears to be widely distributed in Mexico.

Spiranthes minutiflora *A. Richard & Galeotti* in Comptes Rend. Acad. Sci. Par. 18 (1844) 513, *nomen*; in Ann. Sci. Nat. ser. 3, 3 (1845) 32.

Spiranthes nutantiflora Schlechter in Fedde Repert. 2 (1906) 131.

Mesadenus minutiflorus Schlechter in Beihefte Bot. Centralbl. 37, Abt. 2 (1920) 368.

In 1920, the late Dr. Schlechter in his monograph of the Spiranthisinae (Beihefte Bot. Centralbl. 37, Abt. 2 (1920)) created many new genera for species traditionally regarded as representatives of *Spiranthes*. Most of these, if not all of them, are based on recondite characters of the column and pollinia and are not readily observable. Among these genera is the concept *Mesadenus* which we consider best relegated to the synonymy of *Spiranthes*.

A series of specimens from Hidalgo and Distrito Federal, Mexico, recently sent by Erik M. Östlund are surely referable to *S. minutiflora*. They show a general similarity to each other, but embrace a rather wide range of vegetative characters, since they vary from about 8.5–20 cm. in height and most (but not all) of them show at their base withered remains of oblong-elliptical long-peti-

oled leaves. The flowers of these plants show a more or less distinct constriction toward the apex of the lip to form an apical suborbicular lobule, but this constriction is really very slight. These specimens were collected in March at about 2,500 to 2,900 meters altitude.

The type of *S. minutiflora* was obtained at Chiapas, Mexico, at about 6,600 feet altitude. It is a leafless plant about 23 cm. tall, but does not include any root-system such as the fleshy ellipsoid tubers of the Östlund specimens. It has, however, the racemes of similarly loosely disposed flowers. No constriction of the anterior margin of the lip is described or indicated in Galeotti's drawing from the type specimen of *S. minutiflora*. However, the flowers of the Galeotti plant, like those of the Östlund specimens, are distinctly mature (with swollen ovaries) and the constriction might not be evident.

Spiranthes nutantiflora originated from Guatemala, but very near to the Mexican type locality of *S. minutiflora*. It is a plant about 6 cm. high and the raceme is described as subdense. The drawing of its lip shows a distinct anterior constriction forming a suborbicular apical lobe. It was found blooming in November at about 3,000 meters altitude. The somewhat greater altitude, earlier (seasonal) time of bloom, and the less mature flowers would easily account for the dwarf habit and dense inflorescence of this form.

Specimens from Costa Rica, which are referred to *S. nutantiflora*, range from about 9.5–22 cm. in height and show for the most part a few basal elliptical or oblong-elliptical long-petioled leaves in a more or less well-preserved condition. They were collected from December 29 to January 1 at 2,600 to 3,000 meters altitude. In these flowers, the anterior constriction of the lip is somewhat indistinct.

It is therefore evident that the height of the plant,

the presence or absence of basal leaves and the conspicuousness of the anterior constriction of the lip are variable and consequently unreliable characters, and it would appear that we are concerned with a single species extending from southern Mexico to Costa Rica.

Spiranthes polyantha *Reichenbach filius* in *Linnaea* 18 (1844) 408.

Spiranthes Galeottiana A. Richard & Galeotti in *Comptes Rend. Acad. Sci. Par.* 18 (1844) 509, 513, *nomen*; in *Ann. Sci. Nat. ser.* 3, 3 (1845) 32.

Gyrostachys polyantha O. Kuntze *Rev. Gen. Pl.* 2 (1891) 664.

Ibidium lucayanum Britton in *Bull. N. Y. Bot. Gard.* 5 (February 1909) 312.

Spiranthes lucayana Cogniaux in *Urban Symb. Antill.* 6 (December 1909) 338.

Mesadenus Galeottianus Schlechter in *Beihefte Bot. Centralbl.* 37, Abt. 2 (1920) 368.

Mesadenus lucayanus Schlechter in *Beihefte Bot. Centralbl.* 37, Abt. 2 (1920) 368.

Mesadenus polyanthus Schlechter in *Beihefte Bot. Centralbl.* 37, Abt. 2 (1920) 369.

We have recently received from the Reichenbachian herbarium in Vienna a habit drawing with floral analysis of *Spiranthes polyantha* collected at Oaxaca by Galeotti. While the type of the species was noted as "Chapultepec...Leibold", the only specimen of *S. polyantha* extant in the personal herbarium of Reichenbach is the Oaxaca collection cited above. This record appears to be in nearly exact agreement with a specimen of *S. Galeottiana* collected by Galeotti at Oaxaca preserved in the Muséum d'Histoire Naturelle at Paris—a specimen which may reasonably be regarded as the type of *S. Galeottiana*.

In a photographic record and in the very brief de-

scription of *S. Galeottiana*, the leaves are noted as long-petioled and the flowers are described as purple, while in *S. polyantha* the leaves are drawn as relatively short-petioled and the flowers are described as apparently white. However, these discrepancies may be regarded as minor differences when compared with the striking similarity between the species both from the records of the authentic material in our collection and from the type descriptions.

Ibidium lucayanum, of which we have type material, differs somewhat from *S. polyantha* in the form of the lip. This segment might be described as lanceolate-elliptic and distinctly narrowed at each end. The lip of *S. polyantha* is more truly lanceolate, less narrowed at the base and more attenuate toward the tip. In a large series of specimens examined, however, the form of the lip was seen to vary as to the degree of narrowing at base and apex. No other morphological differences between *Ibidium lucayanum* and *Spiranthes polyantha* were noted.

The generic name *Spiranthes* is conserved over Salisbury's *Ibidium* and Persoon's *Gyrostachis*.

Spiranthes polyantha has appeared in the hammocks of southern Florida, in Mexico from numerous stations, as well as in the Bahama Islands, Santo Domingo and Porto Rico.

STUDIES IN STELIS. IV.

BY

OAKES AMES

Stelis pardipes *Reichenbach filius* Beitr. Orch. Centr.-Am. (1866) 96—Hemsl. in Gard. Chron. n.s. 12 (1879) 108—Hemsl. in Godm. & Salv. Biol. Centr-Am. Bot. 3 (1883) 204—Pittier in Anal. Mus. Nac. Costa Rica 1 (1887) 73—Schltr. in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 446; in Fedde Repert. Beihefte 19 (1923) 18, 97, 175.

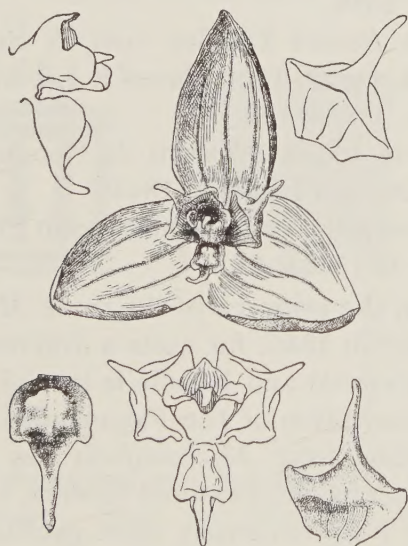
Stelis longicuspis Schlechter in Fedde Repert. 9 (1910) 28; 10 (1912) 291, *in nota*.

Stelis Alberti Schlechter in Fedde Repert. Beihefte 19 (1923) 170.

This species has appeared again and again in collections made in Costa Rica. It is a very common species there, but is unknown elsewhere in Middle America, although it has been found in Peru. When Dr. Schlechter published his *Stelis longicuspis*, he was unfamiliar with authentic material of Reichenbach's *S. pardipes*. In Fedde Repertorium 10 (1912) 291 he reduced *S. longicuspis* to synonymy. Later he published *S. Alberti*, distinguishing it from *S. pardipes* chiefly through the tubular bracts of the secondary stems being without the maculations that characterize typical *S. pardipes*. In my opinion *S. Alberti* is simply a form of *S. pardipes*, agreeing with it in the structure of the flower.

The accompanying illustration was made in part from a flower of Reichenbach's type specimen and in part from Standley 50059, the figures at lower left and right having been drawn from a labellum and petal of Standley's collection. In living specimens the petals and labellum are directed forward, their tips being more or less convergent, and the lateral sepals are more or less

coherent forming a rounded cup. In the drawing of the flower the lateral sepals were forced apart to show their outline and to reveal the petals, labellum and column. The flowers vary markedly in size, the sepals of the type being about 3 mm. long and in some of the more luxuriant forms being twice that length. In *S. pardipes* the flowers are so distinctive that there is no likelihood of confusing it with any other known *Stelis*. The column has stigmatiferous lateral lobes.



COSTA RICA, Desengaño. September 5, 1857. *Wendland* 899 (TYPE of *S. pardipes*); San Pedro de San Ramon. At 1,150 meters altitude. September 1921. *A.M.Brenes* 118 (TYPE of *S. Alberti*); La Palma. At 1,459 meters altitude. September 27, 1898. *A.Tondus* 12650 (TYPE of *S. longicuspis*).

PERU, Department of Junin, Pichis Trail, Dos de Mayo. At 1,700–1,900 meters altitude. Dense forest. July 2 and 3, 1929. *E.P. Killip* & *A.C. Smith* 25806 and 25883; Department of Ayacucho, Aina, between Haunta and Río Apurimac. At 750–1,000 meters altitude. Dense forest. May 7 and 17, 1929. *E.P. Killip* & *A.C. Smith* 22773 (U. S. Nat. Herb. 1357643 in part).

NOMENCLATORIAL NOTES. III.

BY

CHARLES SCHWEINFURTH

Maxillaria crassifolia *Reichenbach filius* in Bonpl. 2 (1854) 16.

Epidendrum sessile Swartz Prodr. Veg. Ind. Occ. (1788) 122, non *Maxillaria sessilis* Lindl. (1845).
Heterotaxis crassifolia Lindley in Bot. Reg. 12 (1826) t. 1028.

Dicrypta Baueri Lindley Gen. & Sp. Orch. Pl. (1830) 44, (1832) 152—Bauer & Lindley Ill. Orch. Pl., Gen. (1833) t. 5.

Maxillaria sessilis Fawcett & Rendle Fl. Jam. 1 (1910) 120, non Lindley (1845).

Maxillaria gatunensis Schlechter in Fedde Repert. Beihefte 17 (1922) 68.

Owing to the prior use of the name *Maxillaria sessilis* by Lindley in 1845, for quite a different species, its later use by Fawcett and Rendle is invalid.

In the description of the Panamanian *M. gatunensis*, its separation from *M. crassifolia* was based on its somewhat larger brighter-colored flowers, broader petals and distinctly 3-lobed densely short-papillose lip.

However, we have examined a blossoming specimen distributed as the type number of *M. gatunensis* and this plant shows flowers scarcely to be distinguished in size, degree of lobing of the lip or papillose character of the disc from typical examples of *M. crassifolia* from Costa Rica, Cuba and Brazil. While the description of *M. gatunensis* gives the length of the sepals as about 2 cm., our example of the type number shows sepals 1.5–1.6 cm. long. The color of *M. crassifolia* is a variable and thus unreliable character.